REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

In response to the Examiner's rejection of claims 1, 3-6, 8-12, 14-17, 19-27 and 29-32 under 35 U.S.C. § 112, second paragraph, the claims have been amended above in an effort to even more particularly and definitely make clear the relationship between a parent node and an incoming new node being added to the network. It is believed to have been self-evident even from the earlier language that the "parent" node was the node to which an incoming new node connects when joining the network -- and that the new joining node is considered to be at a hierarchal level higher than the "parent" node to which it connects when joining the network.

If the Examiner has continued difficulty understanding these very basic concepts and recitations, then it is respectfully requested that the undersigned be telephoned so that an interview can be arranged to assist the Examiner in understanding the claimed hierarchal structure and node-joining methodology here at issue.

The rejection of claims 1, 3-6, 8-12, 14-17, 19-27 and 29-32 under 35 U.S.C. § 103(a) as allegedly being made obvious based on Gregerson '351 in view of O'Toole '273, and further in view of Ho '570 is respectfully traversed.

The Examiner has still failed to point out where in the prior art connection rules are applied by nodes when new nodes join the network, so that each of the nodes in the network implement a globally constrained network topology. The Examiner has referred to the network topology shown in Ho, which is that of a hypercube, which is a very different fixed network topology. A single node joining a hypercube network topology as shown in Ho, would not result in the global network topology conforming to that of the claimed invention. Moreover, nodes

are not described in Ho (or in any other prior art document cited by the Examiner) as reallocating connections already formed with one node when a new child node attempts to connect to them, in order to conform with global network topology constraints.

The Examiner is respectfully reminded that Applicant is not claiming a particular network topology, or the mapping of an existing network topology to a model, or the discovery of new nodes and allocating a level to them in a network hierarchy, but actually providing a node with the means to ensure that when it connects to another node in the network, the network node it connects to will be caused to reallocate its connections and the new child node itself will be configured to form a number of connections to other peripheral nodes (which may be "siblings, cousins or aunties/uncles etc). In other words, network constraints are themselves implemented in a dynamic manner as the network scales in size, and not imposed statically on a preconfigured network topology (such as that proposed in Ho).

The claims have been amended to clarify that while the constraints are set in the network, i.e., globally, they are implemented only on a node-by-node basis (i.e., locally) without any central administrator being involved, and that they result in an existing node changing its connections to other existing nodes when a new child attaches to that existing node to change its role to that of a parent of other nodes.

O'Toole uses a map made of a dynamically variable distributed network of nodes. A new node does not refer to the map before joining the network. It joins the network and the parent node updates the map. No constraints are applied.

In Gregerson, a hierarchical structure is imposed by a system administrator on nodes. On these nodes, kernels operate. In the context of a distributed system, the relationship between the

kernels operating on the nodes requires a new kernel/node to determine its parent kernel/node when it joins the network by listening in a "roll call" process. Once it knows its parent, it can determine its siblings. The level at which a node joins the network is arbitrary. However, nothing in Gregerson teaches constraining a node to have a particular number of siblings or to connect to them in a particular way or disconnect from them under certain circumstances such as those the Applicant's claimed invention outlines. The only logout process that Gregerson describes is when a kernel de-registers from its parent.

Ho relates to distributed computing, but only so far as the need to optimize the distribution of data-blocks in a network of nodes forming a distributed multi-processor system. In fact, Ho at 1:29-43 states

> "an important design objective for a distributed multi-processor is to arrange the topology of the interconnection network and the allocation of data blocks amongst these processors such that the data transmission delays are minimized. In a multiprocessor system, each processor is generally referred to as a node.... in addition to local data processing within each node, it is often necessary to send or receive additional data from other nodes. The method of data-block distribution among the nodes and the connectivity of the data links between the nodes often determine the through put of a multiprocessor system."

The Applicant's invention seeks to optimize the topology of the interconnection network as the network scales in size. This is not even addressed by Ho, which considers a hypercube network topology only.

Ho describes a hypercube multiprocessor computer system with a data block allocation management system. Each processor in an n-dimension hypercube has n-outputs and n-inputs assuming a link can transmit data in both directions (4:58-62). However, this is simply teaching the structure of a hypercube network topology.

Firstly, a hypercube network topology is not the same topology as the claimed invention, which requires at least one central node. Moreover, nothing in Ho teaches a parent node breaking off a connection to a sibling in order to connect to a new child node, and providing the new child node with instructions so that the child node also constrains its connections to sibling nodes according to the same constraints applicable in the network.

The objective problem is how to ensure the physical network topology is constrained so that bottlenecks do not occur. O'Toole teaches how to map a network topology – this would simply enable bottlenecks to be anticipated by someone looking at the map. Gregerson describes a hierarchical structure. Ho teaches that a topology of the network nodes will assume a hypercube structure if each node has a set maximum number of connections to other nodes. A person who reads O'Toole, Gregerson, and Ho, even in combination, would not be taught to impose a constraint set on the network so that when new nodes join the network, the connections formed by one node can be changed automatically by that node to ensure that within the network as a whole the rules are applied.

Given the above fundamental deficiencies of all three references with respect to independent claims 1, 12, 31 and 32, it is not necessary at this time to detail the additional deficiencies of this allegedly "obvious" three-way combination of references with respect to other aspects of the rejected claims. Please note that, as a matter of law, it is impossible for even a *prima facie* case of "obvious" to be supported unless the cited prior art at least teaches or suggest each and every feature of the rejected claim.

The Examiner's attention is also drawn to new independent claim 33 which separately limits the "network" to a "virtual overlap network formed on top of an earlier existing physical

network". It will be noted that the other claims are now explicitly limited to a "physical network" by contrast. Otherwise, it will be noted that the new independent claim 33 includes same limitations as claim 32.

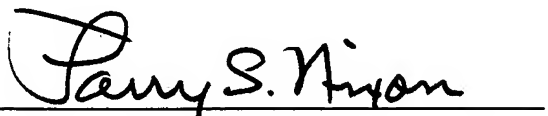
Accordingly, this entire application is now believed to be in allowable condition, and a formal notice to that effect is respectfully solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant respectfully petitions for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee is attached hereto.

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

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